33.(New) The method of claim 1, further including the act of disposing said grouping within a ferrule and affixing said plurality of PM fibers together with epoxy.

34.(New) The method of claim 33, further including the act of maintaining said alignment of said axes throughout the curing process of said epoxy.

35.(New) The method of claim 34, further including the act of maintaining the polarization direction of light traveling through each of said PM fibers throughout said curing process.

REMARKS

Claims 1 and 8 stand rejected under 35 USC § 112, second paragraph, as being indefinite regarding the terms principle and secondary axes. Claims 1, 3, 4, 7, 8, 10, 11, and 14 stand rejected under 35 USC § 102(b) as being anticipated by US Patent 5,420,949 to Arima et al., (hereinafter "Arima"), and claims 2 and 9 stand rejected under 35 USC § 102(b) as being anticipated by US Patent 5,689,578 to Yamauchi et al., (hereinafter "Yamauchi"). Claims 6 and 13 are rejected under 35 USC §103 as being unpatentable over Arima in view of US Patent 5,949,941 to DiGiovanni.

Applicant respectfully traverses these rejections for the reasons stated below.

The 35 USC §112 Rejection

Regarding the principle and secondary axes terms, the Applicant notes that the specification at the bottom of page states:

> The inventors of the present application have discovered that when first and second PM fibers are affixed to each other, the stress of the process forms a secondary fast axis 424 and a secondary slow axis 426 within the pigtail pair 400. These secondary axes optically affect both first and second PM fibers 402 and 414.

Hence, these terms refer to additional, or secondary, fast and slow axes that created as a result of the grouping of optical fibers. These optical axes optically interact with the original, or primary, axes of the individual fibers that comprise the grouping. It is this interaction that the present application aims to minimize.

It is hoped that this explanation clears up any misunderstanding on the part of the Examiner. The Applicant respectfully believes that the §112 rejection has been traversed.

The §§102(b) and 103 Rejections

The Applicant thanks the Examiner for the courtesy of a phone interview on Jan. 14, 2002, in which the cited references were discussed. As mentioned in

the phone interview, both cited references used to form the §102(b) rejections disclose fiber groupings in which the individual fibers are fused together. As a result of such fusing, the optical signals in the fibers may interact in various advantageous manners.

The independent claims of this application have been amended to more clearly recite that the fibers within a grouping are not fused together as in the cited references, and as such the fibers of the present application each provide a separate and distinct optical transmission path. As the cited references do not disclose groupings having separate and distinct optical transmission paths, it is respectfully submitted that the cited reference do not teach or suggest the present application as claimed. Hence, Applicant respectfully believes that the §102(b) rejection has been traversed, and claims 1, 2, 3, 4, 7-11, and 14 are in a condition for allowance.

As claims 6 and 13 are dependent on claims now believed to be allowable, it is respectfully submitted that claims 6 and 13 are in a condition for allowance.

New claims 15-20 have been added to claim the present application in means-plus-function format.

New claims 21-29 are directed towards a polarization beam splitter/combiner.

New claims 30-35 add claims to more particularly point out and distinctly claim the benefits of the present application throughout the manufacturing process.

CONCLUSION

For the above reasons, Applicant respectfully submits that all of the claims are in condition for allowance and Applicant respectfully requests reexamination of the present application, reconsideration and withdrawal of the present rejections and entry of the amendments.

On the basis of the above remarks, early consideration of this application and

early allowance are respectfully requested.

Respectfully,

By: _____

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AMENDMENTS TO SPECIFICATION

On page 2, please replace the first full paragraph with the following paragraph:

Figure 1 shows a cut-away view of a prior art optical fiber 100. Optical fiber 100 includes a core 102 within cladding 104. The indexes of refraction of the core 102 and the cladding 104 [102] are configured using methods standard in the art to allow light launched in to the fiber to be transported through the optical fiber 100. The core 102 and the cladding 104 is typically encapsulated in a jacket 106, which may be fabricated from material standard in the art such as a polymer. As is known by those of ordinary skill in the art, the index of refraction of a typical optical fiber is isotropic, and thus when light is launched in to a fiber the light will tend to travel with an arbitrary polarization direction.

On page 9, please replace the last paragraph with the following paragraph:

Unlike the pigtail pair of FIG. 4, first and second PM fibers 402 and 414 in pigtail pair 400 [600] are disposed within ferrule 428 in a predetermined manner. In the presently preferred embodiment shown in FIG. 5, second PM fiber 414 is aligned such that its corresponding stress applying parts form an axis which is parallel with secondary slow axis 426. In a preferred embodiment, the stress applying parts of second PM fiber 414 each fall on the secondary slow axis of pigtail pair 500. Also, second PM fiber 414 [first PM fiber 402] is aligned such

that its stress applying parts fall on an axis having an angle of approximately a 90° angle with respect to the secondary slow axis 426, as indicated by [angle] α.

AMENDMENT TO THE CLAIMS

Kindly amend claim 1 as follows:

1.(Amended) A method for improving the extinction ratio of a grouping of polarization maintaining (PM) fibers comprising:

providing a plurality of PM fibers, said PM fibers each having corresponding principal axes;

disposing said plurality of PM fibers together as a grouping, said grouping having corresponding secondary axes; and

aligning each said plurality of PM fibers such that said corresponding principal axes of each said plurality of said PM fibers and said secondary axes of said grouping intersect at a predetermined angle while maintaining distinct optical transmission paths in each of said fibers in said grouping.

Kindly amend claim 8 as follows:

8.(Amended) A apparatus which improves the extinction ratio of a grouping of polarization maintaining (PM) fibers comprising:

a plurality of PM fibers, said PM fibers each having corresponding principal axes;

said plurality of PM fibers disposed together as a grouping,

said grouping having corresponding secondary axes; and

whereby each said plurality of PM fibers is aligned such that said corresponding principal axes of each said plurality of said PM fibers and said secondary axes of said grouping intersect at a predetermined angle while maintaining distinct optical transmission paths in each of said fibers in said grouping.

Kindly cancel claims 5 and 12 without prejudice.

Kindly amend claims 9-11, 13, and 14 as follows:

9.(Amended) The apparatus [method] of claim 8, wherein at least one of said predetermined angles is approximately 0°.

10.(Amended) The apparatus [method] of claim 8, wherein at least one of said predetermined angles is approximately 90°.

11.(Amended) The apparatus [method] of claim 8, wherein said PM fiber comprises a PANDA fiber.

13.(Amended) The apparatus [method] of claim 8, wherein said PM fiber comprises a BOWTIE fiber.

14.(Amended) The apparatus [method] of claim 8, wherein said PM fiber comprises a PM fiber using SAP.

Kindly add new claims 15-35 as follows:

15.(New) A apparatus which improves the extinction ratio of a grouping of polarization maintaining (PM) fibers comprising:

a plurality of polarization maintaining fiber means, said fiber means each having corresponding principal axes;

said plurality of fiber means disposed together as a grouping, said grouping having corresponding secondary axes; and

whereby each said plurality of fiber means is aligned such that said corresponding principal axes of each said plurality of said fiber means and said secondary axes of said grouping intersect at a predetermined angle while maintaining distinct optical transmission paths in each of said fibers means in said grouping.

16 (New) The apparatus of claim 15, wherein at least one of said predetermined angles is approximately 0°.

17.(New) The apparatus of claim 15, wherein at least one of said predetermined angles is approximately 90°.

18.(New) The apparatus of claim 15, wherein said fiber means comprises a PANDA fiber.

19.(New) The apparatus of claim 15, wherein said fiber means comprises a BOWTIE fiber.

20.(New) The apparatus of claim 15, wherein said fiber means comprises a PM fiber using SAP.

21.(New) A polarization beam splitter/combiner comprising:

a body having a single mode fiber and a pigtail pair each optically coupled to said body;

said pigtail pair comprising a plurality of polarization maintaining (PM) fibers, said PM fibers each having corresponding principal axes;

said plurality of PM fibers disposed together as a grouping, said grouping having corresponding secondary axes; and

whereby each said plurality of PM fibers is aligned such that said corresponding principal axes of each said plurality of said PM fibers and said secondary axes of said grouping intersect at a predetermined angle while maintaining distinct optical transmission paths in each of said fibers in said grouping.

22.(New) The polarization beam splitter/combiner of claim 22, wherein said pigtail pair is disposed within a ferrule and said plurality of PM fibers are affixed with epoxy.

31.(New) The apparatus of claim 8 or 15, wherein said alignment of said axes is maintained throughout the curing process of said epoxy.

32.(New) The apparatus of claim 8 or 15, wherein the polarization direction of light traveling through each of said PM fibers remains unaffected throughout said curing process.

23.(New) The polarization beam splitter/combiner of claim 22, wherein said alignment of said axes is maintained throughout the curing process of said epoxy.

24.(New) The polarization beam splitter/combiner of claim 23, wherein the polarization direction of light traveling through each of said PM fibers remains unaffected throughout said curing process.

25.(New) The apparatus of claim 24, wherein at least one of said predetermined angles is approximately 0°.

26.(New) The apparatus of claim 24, wherein at least one of said predetermined angles is approximately 90°.

27.(New) The apparatus of claim 24, wherein said PM fiber comprises a PANDA fiber.

28.(New) The apparatus of claim 24, wherein said PM fiber comprises a BOWTIE fiber.

29 (New) The apparatus of claim 24, wherein said PM fiber comprises a PM fiber using stress applying parts (SAP).

30.(New) The apparatus of claim 8 or 15, wherein said grouping is disposed within a ferrule and said plurality of PM fibers are affixed with epoxy.

31.(New) The apparatus of claim 8 or 15, wherein said alignment of said axes is maintained throughout the curing process of said epoxy.

32.(New) The apparatus of claim 8 or 15, wherein the polarization direction of light traveling through each of said PM fibers remains unaffected throughout said curing process.

33.(New) The method of claim 1, further including the act of disposing said grouping within a ferrule and affixing said plurality of PM fibers together with epoxy.

34.(New) The method of claim 33, further including the act of maintaining said alignment of said axes throughout the curing process of said epoxy.

35.(New) The method of claim 34, further including the act of maintaining the polarization direction of light traveling through each of said PM fibers throughout said curing process.